

IN THE CLAIMS:

MARKED-UP VERSION OF THE AMENDED CLAIMS

(Version with marking to show changes made)

1. (cancelled)
2. (cancelled)
3. (currently amended) An improved power assisted lever arm ratchet which is comprised of a first configuration and of a second configuration, wherein the first configuration includes a ratchet handle containing a drive motor and attached to a ratchet head and wherein the second configuration includes the ratchet handle containing the drive motor, a removable ratchet extension sleeve attached to the ratchet handle, a removable ratchet extension shaft attached to the ratchet handle and the ratchet head attached to the ratchet extension sleeve and to the ratchet extension shaft, wherein the ratchet extension sleeve and the ratchet extension shaft are separately removable, wherein a length of the ratchet extension sleeve is substantially equal to a length of the ratchet extension shaft, and wherein the ratchet extension shaft is freely rotatable disposed along a central axis of the ratchet extension sleeve without support from or touching of the ratchet extension sleeve.

4. (previously presented) An improved power assisted lever arm ratchet as described in claim 3 in which said ratchet extension sleeve and ratchet extension shaft are approximately six to thirty inches in length.

5. (currently amended) An improved power assisted lever arm ratchet set which is comprised of a ratchet handle containing a drive motor, a plurality of different length removable ratchet extension sleeves, a plurality of removable ratchet extension shafts and a ratchet head, wherein the plurality of removable ratchet extension sleeves and the plurality of ratchet extension shafts are separately removable, wherein the ratchet handle has a first sleeve attachment device and a first shaft attachment device, wherein the ratchet head has a second sleeve attachment device for engaging a first sleeve attachment type device and has a second shaft attachment device for engaging a first shaft attachment type device and

wherein the ratchet extension sleeves are furnished on a first end with a second sleeve attachment device,

wherein the ratchet extension sleeves are furnished on a second end with a first sleeve attachment device,

wherein the ratchet extension shafts are furnished on a first end with a second shaft attachment device, and

wherein the ratchet extension shafts are furnished on a second end with a first shaft attachment device,

wherein a length between an engagement point of the first end of the ratchet extension shafts and an engagement point of the second end of the ratchet extension shafts is equal to a length between an engagement point of the first end of the ratchet extension sleeves and an engagement point of the second end of the ratchet extension sleeves;
and

wherein first sleeve attachment devices attach to second sleeve attachment devices and wherein first shaft attachment devices attach to second shaft attachment devices for forming ratchets having different lever arm length.

6. (previously presented) An improved power assisted lever arm ratchet set as described in claim 5 in which said ratchet extension sleeves and ratchet extension shafts range from approximately six to thirty inches in length.

7. (withdrawn) An improved power assisted lever arm ratchet which is comprised of a ratchet handle containing a drive motor fixedly attached to a ratchet extension, a ratchet extension shaft fixedly attached to said ratchet handle and a removable ratchet head attached to the ratchet extension and to the ratchet extension shaft.

8. (withdrawn) An improved power assisted lever arm ratchet as described in claim 7 in which said ratchet extension and ratchet extension shaft are approximately six to thirty inches in length.

9. (withdrawn) An improved power assisted lever arm ratchet which is comprised of a ratchet head fixedly attached to a ratchet extension, a ratchet extension shaft fixedly attached to said ratchet head and a removable ratchet handle containing a drive motor, wherein the removable ratchet handle is attached to the ratchet extension and to the ratchet extension shaft.

10. (withdrawn) An improved power assisted lever arm ratchet as described in claim 9 in which said ratchet extension and ratchet extension shaft are approximately six to thirty inches in length.

11. (cancelled)

12. (currently amended) An improved power assisted lever arm ratchet comprising
a ratchet handle containing an air drive motor,

an air line connection furnished to the ratchet handle;

a drive shaft protruding from the ratchet handle;

a drive extension sleeve mounting collar disposed on the ratchet handle and surrounding the drive shaft;

a ratchet extension sleeve having a first end and having a second end, wherein the first end of the ratchet extension sleeve is formed as an interface collar and is attached to the drive extension sleeve mounting collar of the ratchet handle and wherein the second end of the ratchet extension sleeve is formed as an interface thread;

a ratchet extension shaft having a first end and a second end, wherein the ratchet extension shaft is disposed substantially parallel and centered to the ratchet extension sleeve,

wherein a length between an engagement point of the first end of the ratchet extension shaft and an engagement point of the second end of the ratchet extension shaft is substantially equal to a length between an engagement point of the first end of the ratchet extension sleeve and an engagement point of the second end of the ratchet extension sleeve;

a drive socket attached to the first end of the ratchet extension shaft and connected to the drive shaft protruding from the ratchet handle;

a drive tang attached to the second end of the ratchet extension shaft;

a ratchet head having a socket mount and having a threaded collar attached to the interface thread of the second end of the ratchet extension sleeve;

a ratchet head drive shaft attached to the ratchet head and connected to the drive tang of the ratchet extension shaft;

and wherein the ratchet extension shaft is unsupported apart from support furnished by the drive shaft to the first end of the ratchet extension shaft and furnished by the ratchet head to the second end of the ratchet extension shaft; and

wherein the ratchet handle is directly attachable to the ratchet head by connecting the drive shaft of the ratchet handle to the drive shaft of the ratchet head and by connecting the sleeve mounting collar to the threaded collar.

13. (previously presented) The improved power assisted lever arm ratchet according to claim 12

wherein the ratchet extension shaft freely rotates between the drive shaft and the ratchet head drive shaft;

wherein the ratchet extension shaft is surrounded by a jacket of air between the drive shaft and the ratchet head drive shaft; and

wherein the jacket of air is uninterrupted between the drive shaft and the ratchet head drive shaft;

wherein the interface thread is compatible to the drive extension sleeve mounting collar,

wherein the threaded collar of the ratchet head is compatible to the interface collar,

wherein the drive tang is compatible to the drive shaft,

wherein the ratchet head drive shaft is compatible to the drive socket.

14. (withdrawn) The improved power assisted lever arm ratchet according to claim 12

further comprising

an interface collar furnished to the first end of the ratchet extension;

a drive extension sleeve mounting collar (301) attached to the ratchet handle, wherein the interface collar is removably attached to the drive extension sleeve mounting collar.

15. (withdrawn) The improved power assisted lever arm ratchet according to claim 14

further comprising

a ratchet head mount furnished to the second end of the ratchet extension.

a drive extension mounting collar (302) attached to the ratchet head, wherein the ratchet head mount is removable attached to the drive extension mounting collar.

16. (withdrawn) The improved power assisted lever arm ratchet according to claim 12

a ratchet head mount furnished to the second end of the ratchet extension.

a drive extension mounting collar (302) attached to the ratchet head, wherein the ratchet head mount is removably attached to the drive extension mounting collar.

17. (currently amended) An improved power assisted lever arm ratchet comprising

a ratchet handle containing an air drive motor,

an air line connection furnished to the ratchet handle;

a drive extension sleeve mounting collar mounted on the ratchet handle ;

a drive shaft protruding from the ratchet handle and surrounded by the drive extension sleeve mounting collar;

a ratchet extension sleeve having a first end formed as an interface collar and having a second end formed as an interface thread, wherein the first end of the ratchet extension sleeve is attached to the drive extension sleeve mounting collar of the ratchet handle;

a ratchet extension shaft having a first end and a second end, wherein the ratchet extension shaft is disposed substantially parallel to the ratchet extension sleeve;

a drive socket attached to the first end of the ratchet extension shaft and connected to the drive shaft protruding from the ratchet handle;

a drive tang formed at the second end of the ratchet extension shaft;

wherein a length between an engagement point of the drive socket of the ratchet extension shaft and an engagement point of the drive tang of the ratchet extension shaft is essentially equal to a length between an engagement point of the interface collar of the ratchet extension sleeve and an engagement point of the interface thread of the ratchet extension sleeve;

a ratchet head having a drive shaft and having a threaded collar attached to an interface thread of the second end of the ratchet extension sleeve; wherein the drive tang of the second end of the ratchet extension shaft is attached to the ratchet head drive shaft of the ratchet head;

and wherein the ratchet extension shaft is unsupported apart from support furnished to the drive socket of the first end of the ratchet extension shaft and to the drive tang of the second end of the ratchet extension shaft; and

wherein the ratchet handle is directly attachable to the ratchet head by connecting the drive shaft of the ratchet handle to the drive shaft of the ratchet head and by connecting the sleeve mounting collar to the threaded collar.

18. (withdrawn) The improved power assisted lever arm ratchet according to claim 17

further comprising

an interface collar furnished to the first end of the ratchet extension;

a drive extension sleeve mounting collar (301) attached to the ratchet handle, wherein the interface collar is removably attached to the drive extension sleeve mounting collar.

19. (currently amended) An improved power assisted lever arm ratchet comprising

a ratchet handle (101) containing an air drive motor,

an air line connection (105) furnished to the ratchet handle (101);

a ratchet extension sleeve (102) having a first end and having a second end, wherein the first end of the ratchet extension sleeve is attached to the ratchet handle;

a ratchet extension shaft (202) having a first end and a second end, wherein the ratchet extension shaft (202) is disposed substantially parallel to the ratchet extension sleeve (102), and wherein the ratchet extension shaft (202) is unsupported apart from support furnished to the first end of the ratchet extension shaft and the second end of the

ratchet extension shaft; wherein the first end of the ratchet extension shaft (202) is attached to a drive shaft disposed at the ratchet handle (101);

a ratchet head (103) having a socket mount (104) and having attached the second end of the ratchet extension sleeve (102) and having a ratchet head drive shaft attached the second end of the ratchet extension shaft (202),

wherein a length between an engagement point of the first end of the ratchet extension shaft and an engagement point of the second end of the ratchet extension shaft is equal to a length between an engagement point of the first end of the ratchet extension sleeve and an engagement point of the second end of the ratchet extension sleeve;

wherein the ratchet extension shaft is held exclusively by the drive shaft of the ratchet handle and by the ratchet head drive shaft; and

wherein the ratchet handle is directly attachable to the ratchet head.

20. (previously presented) The improved power assisted lever arm ratchet according to claim 21,
- further comprising
- a drive tang (202B) attached to the second end of the ratchet extension shaft (202)
- wherein the drive tang is constructed like the drive shaft (201);

wherein the ratchet head drive shaft (203) attached to the ratchet head (103), wherein the drive tang (202B) engages the ratchet head drive shaft (203), wherein the ratchet head drive shaft is constructed like the drive socket (202A).

21. (previously presented) The improved power assisted lever arm ratchet according to claim 19

wherein the drive shaft (201) is attached to the ratchet handle (101);

further comprising

a drive socket (202A) attached to the first end of the ratchet extension shaft (202), wherein the drive socket (202A) engages the drive shaft (201).

22. (previously presented) The improved power assisted lever arm ratchet according to claim 19

further comprising

wherein the ratchet head (103) is demountable from the ratchet handle (101); and wherein an area between the ratchet extension shaft and the ratchet extension sleeve is completely filled with air.

23.(withdrawn) The improved power assisted lever arm ratchet according to claim 19 further comprising

male threads located on an end of the ratchet handle;
an interface collar furnished to the first end of the ratchet extension and engaging the male threads located at the end of the ratchet handle;
an interface thread (102B) located at the second end of the ratchet extension sleeve (102); and wherein the interface thread is constructed like the male threads;
a threaded collar disposed on the ratchet head (103), wherein the interface thread (102B) engages the threaded collar; and wherein the threaded collar is constructed like the interface collar.

24.(withdrawn) The improved power assisted lever arm ratchet according to claim 19 further comprising

a drive extension sleeve mounting collar (301) disposed at the ratchet handle (101);
a drive extension mounting collar (302) disposed at the ratchet head (103);
a drive shaft (201) mounted at the ratchet handle (101), wherein the first end of the ratchet extension shaft (202) engages the drive shaft (201);
a ratchet head drive shaft (203) mounted at the ratchet head (103), wherein the second end of the ratchet extension shaft (202) is engaged with the ratchet head drive shaft (203);
wherein the ratchet extension is removably attached to the drive extension sleeve mounting collar (301) and to the drive extension mounting collar (302).

25.(withdrawn) The improved power assisted lever arm ratchet according to claim 19

further comprising

a drive extension sleeve mounting collar (301) disposed at the ratchet handle (101);

a drive extension mounting collar (302) disposed at the ratchet head (103);

a ratchet head drive shaft (203) mounted at the ratchet head (103), wherein the second end of the ratchet extension shaft (202) engages the ratchet head drive shaft (203);

a drive shaft (201) mounted at the ratchet handle (101), wherein the first end of the ratchet extension shaft (202) is engaged with the drive shaft (201);

wherein the ratchet extension is removably attached to the drive extension sleeve mounting collar (301) and to the drive extension mounting collar (302).

26.(withdrawn) The improved power assisted lever arm ratchet according to claim 19

further comprising

a ratchet head drive shaft (203) attached to the ratchet head (103) and extended to a length appropriate, wherein ratchet extension (202) is fixedly attached to ratchet head (103);

a drive shaft (201) attached to the ratchet handle (101), wherein the ratchet head drive shaft (203) engages the drive shaft (101);

a drive extension sleeve mounting collar (301) disposed at the ratchet handle (101), wherein the ratchet extension (102) is removably attached to the drive extension sleeve mounting collar (301)

27.(previously presented) The improved power assisted lever arm ratchet according to claim 19

wherein the ratchet extension is furnished by a tubular piece and wherein the ratchet extension shaft is furnished by a solid rod; and wherein the ratchet extension shaft is not supported by any bearings located between a surface of the ratchet extension shaft and an inner wall of the ratchet extension sleeve..

28.(previously presented) The improved power assisted lever arm ratchet according to claim 19

wherein the ratchet extension shaft (202) is connected to a rotary output of the air drive motor and wherein the socket mount (104) is rotation transferring connected to the ratchet extension shaft (202).

29.(previously presented) The improved power assisted lever arm ratchet according to claim 19

wherein the ratchet extension shaft is disposed in the ratchet extension sleeve and disposed for freely rotating in the ratchet extension sleeve.

30.(previously presented) The improved power assisted lever arm ratchet according to claim 19

wherein the ratchet extension surrounds the ratchet extension shaft without contact between the ratchet extension sleeve and the ratchet extension shaft.

31.(previously presented) The improved power assisted lever arm ratchet according to claim 19

wherein the ratchet extension sleeve and the ratchet extension shaft are separate elements, wherein the relative position of ratchet extension sleeve and ratchet extension shaft are defined by the respective mountings on the ratchet handle and on the ratchet head.

32. (previously presented) The improved power assisted lever arm ratchet according to claim 19,

further comprising

a drive tang (202B) attached to the second end of the ratchet extension shaft (202) wherein the drive tang is constructed like the drive shaft (201);

wherein the ratchet head drive shaft (203) attached to the ratchet head (103), wherein the drive tang (202B) engages the ratchet head drive shaft (203);

wherein the drive shaft (201) is attached to the ratchet handle (101);

further comprising

a drive socket (202A) attached to the first end of the ratchet extension shaft (202);

wherein the ratchet head drive shaft is constructed like the drive socket (202A);

wherein the drive socket (202A) engages the drive shaft (201);

wherein the ratchet head (103) is demountable from the ratchet handle (101); and

wherein an area between the ratchet extension shaft and the ratchet extension sleeve is completely filled with air;

wherein the ratchet extension is furnished by a tubular piece and wherein the ratchet extension shaft is furnished by a solid rod; and wherein the ratchet extension shaft is not supported by any bearings located between a surface of the ratchet extension shaft and an inner wall of the ratchet extension sleeve;

wherein the ratchet extension shaft (202) is connected to a rotary output of the air drive motor and wherein the socket mount (104) is rotation transferring connected to the ratchet extension shaft (202);

wherein the ratchet extension shaft is disposed in the ratchet extension sleeve and disposed for freely rotating in the ratchet extension sleeve;

wherein the ratchet extension surrounds the ratchet extension shaft without contact between the ratchet extension sleeve and the ratchet extension shaft;

wherein the ratchet extension sleeve and the ratchet extension shaft are separate elements, wherein the relative position of ratchet extension sleeve and ratchet extension shaft are defined by the respective mountings on the ratchet handle and on the ratchet head.

33. (currently amended) A kit of an extendable power assisted lever arm ratchet comprising

a ratchet handle containing an air drive motor and connecting to an air line connection and having a drive shaft protruding from the ratchet handle and having a sleeve mounting collar disposed on the ratchet handle and surrounding the drive shaft;

a ratchet extension shaft having a first end and a second end, wherein the first end of the ratchet extension shaft is formed as a drive socket and wherein the second end of the ratchet extension shaft is formed as a drive tang;

a ratchet extension sleeve having a first end and having a second end, wherein the first end of the ratchet extension sleeve is formed as an interface collar and is attached to the drive extension sleeve mounting collar of the ratchet handle and wherein the second end of the ratchet extension sleeve is formed as an interface thread;

wherein a length between an engagement point of the first end of the ratchet extension shaft and an engagement point of the second end of the ratchet extension shaft is equal to a length between an engagement point of the first end of the ratchet extension sleeve and an engagement point of the second end of the ratchet extension sleeve;

a ratchet head having a drive shaft and having a threaded collar;

wherein the ratchet extension shaft and the ratchet extension sleeve are to engage with a ratchet handle and a ratchet head as follows;

wherein the ratchet handle is attachable to the ratchet head by connecting the drive shaft of the ratchet handle to the drive shaft of the ratchet head and by connecting the sleeve mounting collar to the threaded collar thereby forming a ratchet;

wherein the ratchet is extendable by inserting the ratchet extension sleeve and the ratchet extension shaft between the ratchet handle and the ratchet head by connecting the drive shaft of the ratchet handle to the drive socket, by connecting the sleeve mounting collar to the interface collar, by connecting the drive tang to the drive shaft of the ratchet head and by connecting the interface thread to the threaded collar thereby forming an extended ratchet;

wherein the ratchet extension shaft is unsupported apart from support furnished by the drive shaft of the ratchet handle to the first end of the ratchet extension shaft and furnished by the drive shaft of the ratchet head to the second end of the ratchet extension shaft; and

wherein the ratchet extension shaft is disposed substantially parallel and centered to the ratchet extension sleeve.

34. (currently amended) An extension kit for a power assisted lever arm ratchet comprising

a ratchet extension shaft having a first end and a second end, wherein the first end of the ratchet extension shaft is formed as a drive socket and wherein the second end of the ratchet extension shaft is formed as a drive tang;

a ratchet extension sleeve having a first end and having a second end, wherein the first end of the ratchet extension sleeve is formed as an interface collar and is attached to the drive extension sleeve mounting collar of the ratchet handle and wherein the second end of the ratchet extension sleeve is formed as an interface thread;

wherein a length between an engagement point of the drive socket of the ratchet extension shaft and an engagement point of the drive tang of the ratchet extension shaft is equal to a length between an engagement point of the interface collar of the ratchet extension sleeve and an engagement point of the interface thread of the ratchet extension sleeve;

wherein the ratchet extension shaft and the ratchet extension sleeve are to engage with a ratchet handle and a ratchet head as follows;

wherein the ratchet handle contains an air drive motor and connects to an air line connection;

wherein a drive shaft protrudes from the ratchet handle;

wherein a sleeve mounting collar is disposed on the ratchet handle and surrounds the drive shaft;

wherein the ratchet head has a drive shaft and has a threaded collar;

wherein the ratchet handle is attachable to the ratchet head by connecting the drive shaft of the ratchet handle to the drive shaft of the ratchet head and by connecting the sleeve mounting collar to the threaded collar thereby forming a ratchet;

wherein the ratchet is extendable by inserting the ratchet extension sleeve and the ratchet extension shaft between the ratchet handle and the ratchet head by connecting the drive shaft of the ratchet handle to the drive socket, by connecting the sleeve mounting collar to the interface collar, by connecting the drive tang to the drive shaft of the ratchet head and by connecting the interface thread to the threaded collar thereby forming an extended ratchet;.

35. (previously presented) The extension kit for a power assisted lever arm ratchet according to claim 34,

wherein the ratchet extension shaft is unsupported apart from support furnished by the drive shaft of the ratchet handle to the first end of the ratchet extension shaft and